DOCUMENT RESUME

ED 347 987 IR 015 724

AUTHOR Earle, Rodney S.

TITLE The Use of Instructional Design Skills in the Mental and Written Planning Processes of Teachers.

PUB DATE Feb 92

NOTE 17p.; In: Proceedings of Selected Research and Development Presentations at the Convention of the Association for Educational Communications and Technology and Sponsored by the Research and Theory Division; see IR 015 706. For a related paper, see IR 015 707.

PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *College Graduates; Educational Background; *Elementary School Teachers; Elementary Secondary Education; Graduate Surveys; Higher Education; Information Utilization; *Instructional Design; *Secondary School Teachers; *Theory Practice Relationship

IDENTIFIERS *Teacher Planning; University of North Carolina Wilmington

ABSTRACT

This study focuses on the relationship between teacher mental planning and instructional design (ID) skills for the graduates of the teacher education program at the University of North Carolina at Wilmington (UNCW), which has had a two-semester sequence in instructional design (ID) and evaluation since 1976. The two courses are designed to provide the students with a practical, systematic process to use when planning instruction, together with the necessary ID principles and skills for producing technically sound, teacher delivered instruction. Recent graduates (1980-1990) from the undergraduate preservice teacher education program were asked to respond to a four-part survey which covered demographics, general information, yearly planning, and daily planning. Similar questions addressed each aspect of planning. A randomly selected group received two surveys with instructions to share one with colleagues who had not graduated from UNCW. The second phase of the study involved interviewing teachers in more detail to flesh out the initial findings from the survey and to explore further the process of mental planning. It was found that teachers plan in different time frames with varying emphases at each level, i.e., yearly, unit, and daily planning. There is adequate evidence that teachers approach their planning in very systematic ways, emphasizing the ID skills of learner analysis, objectives, tests, instructional strategies, and formative evaluation. Statements by teachers also documented the use of mental imagery in the planning process. It is concluded that the role of instructional designers in transforming education lies in helping their graduates to bridge the gap between theory and practice. Survey data are displayed in eight tables. (24 references) (BBM)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED347987

Title:

The Use of Instructional Design Skills in the Mental and Written Planning Processes of Teachers

Author:

Rodney S. Earle

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Michael Simonson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

1201724

Fingers in the Dike

Public schools in particular and education in general have been widely criticized in recent years. Although criticism is not new in the field of education, current critics are focusing their concerns on the "products" of education--our children--and the skills they seem to lack. The feeling is that our nation is at risk because of our students' lack of preparation for entering the work force. Our "once unchallenged preeminence in commerce, industry, service, and technological innovation is being overtaken by competitors throughout the world" partly because of the "rising tide of mediocrity" in the schools (National Commission on Excellence in Education, 1983, p. 5). Such international comparisons highlight deficiencies in our current educational system.

Over the years such criticism has generated both beneficial and detrimental changes in our approaches to education. In response, the educational pendulum has swung excitedly from one extreme to the other, advocating this program or that activity to solve the educational dilemma. However, this bandwagon approach, rather than providing valid solutions to the problems, merely administers "band-aid" treatments to the symptoms.

This prevalent quick-fix mindset reminds me of a favorite story from one of my elementary school readers. A little Dutch boy who lived in the flood-prone lowlands of Holland discovered a small leak in one of the protective dikes which held back the waters of the North Sea. Although only a dribble was visible, he knew that, before he could summon adult help, the water would have eroded a large, destructive opening in the earthen bank. So he took the only practical action possible in those circumstances--he stuck his finger in the hole in the dike and stopped the leak--and thus averted a life-threatening deluge of water from destroying his village. His courageous stop-gap action, though effective, was merely a temporary measure. Eventually the dike had to be rebuilt and strengthened to avoid future deterioration.

It is thus with education and the public schools. There are just too many courageous, dedicated teachers, parents, students, and administrators with their "fingers in the educational dike"--with little hope of developing a strong and effective system as long as their efforts are concentrated on symptoms rather than causes.

What are the causes of the apparent failure of our children to meet the criteria for acceptable performance? Have we lost sight of our goals? Is the pursuit of excellence too difficult? Do we need increased budgets and salaries? Are our teachers only mediocre? Are our curricula outdated or unrealistic? Answers to questions such as these will be found as we adopt a new perspective for the public schools--a change from the traditional myopic "finger-in-the-dike" approach which has pervaded education for generations to a focus on human performance.

It is indeed time to break out of the current mediocrity cycle which continues to produce students who lack adequate preparation for the work force as we move from an industrial to an information and service age. Educational technology is the catalyst for this change. No, I don't mean that we merely need more computers in the classrooms. Technology involves process. It is the ***system*** which requires our attention. Too often our efforts to improve education have resulted in an unrealistic isolation of technological tools (e.g., interactive video, hypermedia, and computers) from the technological system or process. For example, although a recent report of a National Education Association committee discusses the significant ways in which technological

innovations will significantly improve educational opportunities and warns against a piecemeal approach, their emphasis is still on "things" (hardware and software) rather than process (NEA Special Committee Report, 1989). Remember educational television in the 60's? We expended our entire resources on installing equipment which soon began to gather dust because we neglected the process component. Don't get me wrong. I do believe that such tools are indeed valuable resources, but only when used in an effective system which develops human competence, only when used in the systematic design of instruction. Until such a system is in place, promoting one tool or another is simply adding more fingers to the dike.

Technology as Process: Using ID Skills

Technological changes in teacher preparation programs have emphasized instructional design theory as a vehicle for improvement (Reiser, 1988; Shrock & Byrd, 1988; Schiffman, 1988; Knirk, 1988; Earle, 1985). Although this is a valuable framework for preparing teachers, it is not widely used in teacher education programs (Schiffman and Gansneder, 1987; Rossett and Garbosky, 1987; Earle, 1989). "Except for a brief spurt of activity in the early 1970s, instructional designers have not played a major role in higher education or in the public schools" (Reiser, 1988, p. 5).

A recent survey of graduate programs in instructional technology (Schiffman & Gansneder, 1987) attempted not only to identify characteristics of such programs but also to outline their involvement in teacher education or the public schools. Although many programs offered media and computing courses for teacher education majors, those specializing in instructional design tended to offer no ID courses for teachers. The same survey also indicated that ID faculty are less likely to participate in teacher education planning or to have formal ties with schools than those in the media and computing areas.

The rift between theory and practice is obvious - particularly in an area where the design of appropriate instruction is critical: the schools and the teachers in those schools. The challenge is equally as obvious - bridging the gap so that instructional design theory is part of a teacher's repertoire.

Teaching Planning

Planning can be viewed from two perspectives--as a blueprint or as a process (Yinger, 1979). McCutcheon (1980) considered the complex, reflective mental dialogue which is prerequisite to written plans as by far the "richest form of teaching planning" (p. 7).

The teacher planning literature has attended in the past to the categories of planning (which, in many ways resemble the steps in the ID process), the time frames of planning, and the products or processes of planning. (McCutcheon, 1980; Clark & Yinger, 1979; Morine-Dershimer, 1978-9; Peterson, Marx, & Clarke, 1978; Zahorik, 1975). More recent research has emphasized the practical applications of ID skills in the planning processes of teachers (Reiser & Mory, 1991; Klein, 1991; Martin, 1990; Martin & Clemente, 1990).

This study focusses not only on differences and similarities between the written product and the mental process of teacher planning, but also on the systematic framework used by teachers in this process.

The UNCW Program

The undergraduate teacher education program at the University of North Carolina at Wilmington has had an instructional design component since 1976 (Earle, 1985). This component

involves a two-semester sequence with the first course concerned with instructional design and the second course the study of classroom evaluation. In our ID course, we emphasize the importance of a systems approach to planning instruction and teach our students fundamental concepts, principles, and skills (at a basic level) of instructional design. In the companion evaluation course, we continue to use an ID model to provide a meaningful context for classroom evaluation, emphasizing the interdependence of instructional decisions and evaluation decisions. We are primarily interested in teaching our students a practical, systematic process to use when planning instruction, together with the necessary ID principles and skills for producing technically sound, teacher delivered instruction. Thus, our courses are designed to enhance the application of instructional design for teachers.

From the beginning, our aim has been to develop applications of the instructional design process that would serve the planning of teacher delivered instruction, rather than materials-based instruction. We have never envisioned our goal as preparing preservice teachers to be full-fledged instructional designers in the schools, but rather to develop teachers who can apply a systematic process for developing more effective instruction, especially where the teacher is likely to be the centerpiece of instructional delivery. At the same time we have taken the view that all of the major steps in a generic ID model and the basic skills associated with them can be taught at the undergraduate level and do have value for the classroom teacher. Support for this view can also be found in writings by Beilby, 1974; Stolovitch, 1980; Dick and Carey, 1985; Dick and Reiser, 1989; Martin & Clemente, 1990; and Reiser & Mory, 1991.

At UNCW the instructional design component of the curriculum is intended to provide students with a particular way of thinking about and planning instruction. We have attempted to create a teacher education program (not merely a single course) that promotes the adoption and development of a systematic approach to instruction. Consequently, the entire program, at least ideally, is designed to support the application of instructional design skills and principles to teaching. Methods instructors and practicum supervisors are expected to support the further development of students' ID skills initially acquired in the instructional design course. Of course, we do find that certain ID concepts and skills are better understood, receive greater emphasis, and are better maintained over the course of the program than are others. Not surprisingly, those aspects that are most easily transferred to the day-to-day activities of teachers get emphasized. In addition to Gagne's taxonomy and the events of instruction, objectives receive continued emphasis (although typically in abbreviated form), as do learner analysis and criterion referenced testing practices.

Purpose

This study continues to investigate the effects of preservice ID skills on classroom practice. Do graduates of our program actually use the ID skills we teach them? If so, how? If not, why not? Are they modified in practice?

In particular, the study focuses on the relationship between teacher mental planning and ID skills for our graduates. Clemente and Martin (1990) have outlined a comparison of ID components and teacher mental planning which attempts to link ID theory with classroom practice. Although much has been written about the teacher planning process (Yinger, 1979; Morine-Dershimer, 1978-79; McCutcheon, 1980; Clark & Peterson, 1986), we in the instructional design field seem to have neglected a valuable body of research. This study attempts to not only show the value of ID skills for preservice teachers, but also link those skills with teacher mental planning.

Process

We identified recent graduates (1980-1990) from our undergraduate preservice teacher

education programs. We asked them to respond to a four-part survey which covered demographics, general information, yearly planning, unit planning, and daily planning. Similar questions addressed each aspect of planning. A randomly-selected group received two surveys with instructions to share one with colleagues who had not graduated from UNCW. The survey was adapted from instruments developed by Barbara Martin and Robert Reiser.

The second phase of the study involved interviewing teachers in more detail to flesh out the initial findings from the survey and to explore further the process of mental planning.

Phase I: Initial Findings and Opportunities for Reflection

A review of the data has resulted in the following observations. Tables 1-8 provide a more detailed summary of the survey responses. These areas are explored further in the follow-up interview phase of this study.

1. 81% of teachers felt that a knowledge of ID processes had improved their planning (6% No; 13% Not Sure).

2. The crucial elements of the ID process were goals, learner analysis, objectives, tests, activities/strategies, and revision of instruction. These were also the areas treated formally by teachers. Those elements considered helpful (if time allowed) were task analysis, classification of learnings, instructional plans, and trying out instruction. These were treated informally and usually implemented through mental planning. Of particular interest was the fact that instructional plans were found to be helpful but not crucial.

3. Written plans focused more on objectives and tests and to a lesser degree on activities...but not on instructional plans. It appears that use of written plans may be affected by administrative requirements.

4. Unit planning concentrated on goals, learners, objectives, tests, and strategies. Daily plans emphasized learners, objectives, strategies/activities, instructional plans, and revision of instruction. Objectives were also stressed at the yearly level. Of particular interest, and perhaps expected, was the low response to trying out instruction...treated informally and mentally and considered helpful <u>if time allowed</u>.

5. Although teachers regarded mental and written planning as almost equal in importance at the yearly, unit, and daily levels, they favored mental planning overall.

6. Teachers deviated more from yearly plans and less from unit and daily plans. Daily and unit planning were viewed as more important.

7. 66% of teachers indicated that more than 50% of their unit planning resulted in written plans. 47% responded that they wrote more than 50% of their daily plans.

8. Content took more time at the yearly level and least at the daily level. Slightly more time was given to materials in daily planning. More time was spent on activities at the unit and daily level. Tests took equal time at all levels. More time was allocated to objectives at the yearly level.

Phase II: Spontaneously Systematic or Systematically Spontaneous?

The following comments were gathered from in-depth interviews with teachers in which we

discussed their planning before, during, and after the school year. I have grouped representative quotes into three major areas--time frames of planning, the framework or systematic approach to planning, and the mental processes of planning.

Time Frames.

Teachers do indeed plan in different time frames with varying emphases at each level.

1. Yearly Planning

- I sit down at the beginning of the year and ask 'what do I want to accomplish?'
- I plan for the year in chunks, correlating with the science and social studies teacher.
- The timelines are in my mind...basically mental...I don't write down the scope and sequence.
- I think back on what worked last year and what didn't.

2. Unit Planning

- I map it out in home base...with monthly themes and activities.
- A monthly calendar on PrintShop...a packet with objectives, times, material lists, activities, and assessment or evaluation ideas.

3. Daily Planning

- A notebook with a lesson outline including...objective, focus and review, teacher input, guided practice, independent practice, and closure.
- I like to see four weeks at a glance...in each daily block I use shorthand...a rough sketch of what I want to do...not a lot of detail.
- Every class is at a different point...notecards...a record of where they're at. There's a lesson plan laid out...this is where I want to be and want to do.

Systematic Framework

There is adequate evidence that teachers approach their planning in very systematic ways, emphasizing at least the following ID skills.

1. Learner Analysis

- We really plan as to how we see the needs of the children.
- The reactions of the students actually helped me in my planning for the next time I taught this.
- I try to know my kids, their minds, who they are. Test scores are available for reference.
- I look at the children and try to understand where they're coming from.
- I don't like to have a preconceived idea...although I do want to know if there are problems in their lives.
- I use their cumulative folders and sometimes talk to other teachers, especially to see what worked well for the child in other classes.
- I've got to watch MTV, read the newspaper, do all this stuff to bring in what's really relevant and fun to these kids, or I'm going to lose them.

2. Objectives

- I use the list of competency goals and indicators as a checklist...as we accomplish them it's a guide to progress.
- Objectives and goals drive my curriculum.
- I tell them everything has a purpose, everything has a goal, everything has an objective and an ultimate end to it and you have to know what that is when you go through the whole process.

3. Tests

- I set out with the goal of what I want the students to achieve and learn...don't make out the test till maybe the third week of the unit...want to see what concepts are being grasped...to see how comfortable and competent they are.
- I have to know if I've given them enough practice. What is the best item format for them?
- I can measure their performance only if there's been sufficient instruction and practice.

4. Instructional Strategies

- I brake for the teachable moment...I am spontaneous...use ideas on the spur of the moment.
- Most of my planning time I'm working on how to get things across to the kids.
- When the kids begin telling you what they'd like to do...when they understand the purpose...then you can really start envisioning.
- The content varies but the system or framework is constant.
- I follow a six step lesson plan--objectives, focus and review, teacher input, guided practice, independent practice, and closure...this is my framework.
- I use different materials depending upon current events, but the concepts and objectives remain the same.

5. Formative Evaluation

- I don't keep my lesson plans from year to year. It really changes. Every year's different--my kids are different--what's going on is different--the world is different.
- I think about what worked and what didn't.

The Process: Mental Imagery

The following statements by teachers certainly support McCutcheon's funding that "much of [teaching planning] never appeared on paper...[but] resembled a rehearsal of the lesson, an envisioning of what would happen." (1980, p. 7)

- I visualize my classroom...mentally see it...like playing a videotape.
- I had to get it down on paper while I had it envisioned.
- We're thinking these things in our minds...seeing them.
- I don't get much sleep in August. I envision...I'm designing my classroom...doing a bulletin board...teaching a lesson. It's visual. I can actually see it in my mind.
- If I've envisioned it--how it's going to go--it's almost as if I've done it before--I'm trying to relive what I've seen.
- If there's a glitch in the lesson, it's like static on the video.
- I "see" potential problems as well--I look at the best and the worst.
- Even while I'm teaching...just like something jumps out at you...I can see what I'm

going to do.

- Sometimes I don't write lesson plans...but my classes were clicking...I had the plans in my mind...It worked because of my internal framework.
- I like to see things systematically done and I'm going over them in my mind, putting all the visual pieces together.

A Few Concluding Thoughts

This is exciting stuff--bridging the gap between theory and practice. This is where our future lies as instructional designers--developing collegial relationships with front line practitioners. We can help teachers apply ID skills because, as one teacher observed: "Once we get the framework, the system, we're constantly using it and revising it." This is where we can really make a difference in transforming education, in ensuring successful performances by our students, in meeting the challenge to break out of the mediocrity cycle.

Table 1: Formal and Informal Use of ID Processes

	Formal	Informal
a. develop or review course and unit goals	67%	33%
b. develop a task analysis or learning hierarchy to identify prerequisite skills and sequence	33%	67%
c. classify types of learning indicated in the content	17%	83%
d. analyze the abilities and needs of learners	75%	25%
e. develop performance and/or behavioral objectives	75%	25%
f. develop tests that match the learnings described in the objectives	67%	33%
g. select or produce learning activities and strategies that match the type of learning and objective	71%	29%
h. follow a systematic instructional plan (e.g., Gagne's events of instruction, the N.C. six point plan, or Madeline Hunter's steps, etc.)	60%	40%
i. try out the instruction prior to using it in the classroom	8%	92%
j. revise the instruction based on the results observed during teaching	53%	47%

Table 2: Written or Mental Plans

	Written	Mental
a. develop or review course and unit goals	56%	44%
b. develop a task analysis or learning hierarchy to identify prerequisite skills and sequence	29%	71%
c. classify types of learning indicated in the content	19%	81%
d. analyze the abilities and needs of learners	39%	61%
e. develop performance and/or behavioral objectives	74%	26%
f. develop tests that match the learnings described in the objectives	76%	24%
g. select or produce learning activities and strategies that match the type of learning and objective	60%	40%
h. follow a systematic instructional plan (e.g., Gagne's events of instruction, the N.C. six point plan, or Madeline Hunter's steps, etc.)	53%	47%
i. try out the instruction prior to using it in the classroom	14%	86%
j. revise the instruction based on the results observed during teaching	55%	45%

Table 3: Use of ID Processes in Yearly, Unit, and Daily Planning

	Year	Unit	Day
a. develop or review course and unit goals	50%	70%	30%
b. develop a task analysis or learning hierarchy to identify prerequisite skills and sequence	30%	45%	25%
c. classify types of learning indicated in the content	10%	25%	35%
d. analyze the abilities and needs of learners	30%	50%	65%
e. develop performance and/or behavioral objectives	40%	45%	45%
f. develop tests that match the learnings described in the objectives	10%	55%	35%
g. select or produce learning activities and strategies that match the type of learning and objective	20%	55%	70%
h. follow a systematic instructional plan (e.g., Gagne's events of instruction, the N.C. six point plan, or Madeline Hunter's steps, etc.)	10%	35%	70%
i. try out the instruction prior to using it in the classroom	10%	20%	25%
j. revise the instruction based on the results observed during teaching	30%	55%	75%

Table 4: The Value of ID Processes

	Crucial	Helpful	Unimportant
a. develop or review course and unit goals	67%	33%	0%
b. develop a task analysis or learning hierarchy to identify prerequisite skills and sequence	25%	67%	8%
c. classify types of learning indicated in the content	17%	50%	33%
d. analyze the abilities and needs of learners	92%	8%	0%
e. develop performance and/or behavioral objectives	83%	0%	17%
f. develop tests that match the learnings described in the objectives	75%	17%	8%
g. select or produce learning activities and strategies that match the type of learning and objective	83%	17%	0%
h. follow a systematic instructional plan (e.g., Gagne's events of instruction, the N.C. six point plan, or Madeline Hunter's steps, etc.)	17%	75%	8%
i. try out the instruction prior to using it in the classroom	0%	75%	25%
j. revise the instruction based on the results observed during teaching	67%	33%	0%

Table 5: Importance of Written and Mental Plans

	Written	Mental	Equal
Overall	25%	37.5%	37.5%
Year	31%	31%	38%
Unit	29%	7%	64%
Daily	33%	27%	40%

Table 6: Following Plans

	Year	Unit	Daily
Very Closely	8%	8%	13%
Closely (< 25% deviation)	46%	77%	67%
Somewhat Closely (25-49% deviation)	31%	15%	20%
Somewhat Loosely (50-75% deviation)	15%	0%	0%
Very Loosely (> 75% deviation)	0%	0%	0%

Table 7: Importance of Planning

	Year	Unit	Daily
Crucial (100% of the time)	23%	31%	60%
Useful (75% of the time)	46%	69%	40%
Generally Useful (50% of the time)	31%	0%	0%
Minimally Useful (25% of the time)	0%	0%	0%
Not Very Useful (< 10% of the time)	0%	0%	0%

Table 8: Amount of Written Planning

	Overall	Year	Unit	Daily
More than 75%	29%	33%	33%	27%
50% - 74%	18%	20%	33%	20%
25% - 49%	35%	27%	27%	33%
Less than 25%	18%	20%	7%	20%

REFERENCES

Beilby, A. E. (1974). Instructional development in the public schools: Whose job? Educational Technology 14(1).

Clark, C.M. & Peterson, P. L. (1986). Teachers process. In M. C. Wittrock (Ed.), Handbook of Research on Teaching (pp. 255-296). New York: MacMillan Publishing Company.

Clark, C.M. & Yinger, R.J. (1979). Three studies of teacher planning. (Research Series No. 55). East Lansing, MI: Michigan State University, Institute for Research on Teaching. (ERIC ED175-855).

Clemente, R. & Martin, B. (1990). A comparison of teacher mental planning elements and instructional system design components. AECT Paper.

Dick, W. & Carey, L. (1985). The systematic design of instruction, 2nd ed. Glenview, IL.: Scott, Foresman and Company.

Dick, W., & Reiser, R. A. (1989). Planning effective instruction. Englewood Cliffs, NJ: Prentice Hall.

Earle, R. S. (1985). Teachers as instructional designers. Educational Technology, 15 (8).

Earle, R. S. (1989). Instructional design theory in teacher education: A survey. Wilmington, N.C.: The University of North Carolina at Wilmington.

Klein, J. D. (1991). Preservice teacher use of learning and instructional design principles. Educational Technology Research and Development, 39(3), 83-89.

Knirk, F. G. (1988). Implications of instruction technology for the future of education. Journal of Instruction Development, 11 (3), 10-15.

McCutcheon, G. (1980). How do elementary school teachers plan? The nature of planning and influences on it. The Elementary School Journal, 81, 1, 4-23.

Martin, B. L. (1990). Teacher's planning processes: Does ISD make a difference? Performance Improvement Quarterly, 3(4), 53-73.

Martin, B.L. & Clemente, R. (1990). Instructional systems design and the public schools. Educational Technology Research and Development, 38(2), 61-75.

Morine-Dershimer, G. (1978-79). Planning in classroom reality and in-depth look. Educational Research Quarterly. 3, 4, 83-99.

Peterson, P.L., Marx, M.W., & Clarke, C.M. (1978). Teacher planning, teacher behavior, and student achievement. American Educational Research Journal, 15(3), 419-432.

Reiser, R. A. (1988). Instructional designers in public schools and higher education: Predictions for the year 2001. Journal of Instructional Development 11(3), 3-6.

Reiser, R.A. & Mory, E.A. (1991). An examination of the systematic planning techniques of two experienced teachers. Educational Technology Research and Development,39(3),71-82.

BEST COPY AVAILABLE

Rossett, A. & Garbosky, J. (1987). The use, misuse, and non-use of educational technologists in public education. Educational Technology, 27(9), 37-42.

Schiffman, S. S. and Gansneder, B. M. (1987). Graduate programs in instructional technology: Their characteristics and involvement in public education. Journal of Instructional Development, 10(5), 22-28.

Schiffman, S.S. (1988). Influencing public education. A "window of opportunity" through school library media centers. Journal of Instructional Development, 10(4), 41-44.

Shrock, S.A. & Byrd, D.M. (1988). An instructional development look at staff development in the public schools. Journal of Instructional Development, 10(4), 45-53.

Stolovitch, E. J. (1980). Instructional technology and its challenges to teacher training. N.S.P.I. Journal, 19(6).

Yinger, R. (1979). Routines in teacher planning. Theory Into Practice. 18, 3, 163-169.

Zahorik, J.A. (1975). Teachers' planning models. Educational Leadership, 33(2), 134-139.